

REMARKS

This Amendment is responsive to the Office Action mailed on July 22, 2002. A Petition for a 1-month extension of time is attached so that the due date for responding is extended to and including November 22, 2002.

Prior to this Amendment, claims 1-12 were canceled, and claims 13-23 were pending. In this Amendment, claims 24-27 are added so that claims 13-27 are pending. Claims 13-27 are subject to an election of species requirement. As noted in the Office Action, claims 12, 13, 15, 17-19, 21, and 24-27 are subject to examination on the merits.

Support for new independent claim 24 can be found at, for example, page 9 of the application. Support for new claim 27 can be found at page 8, line 15 of the specification. No new matter is added.

IDS filed July 5, 2002

An Information Disclosure Statement (IDS) was filed on July 5, 2002. However, a copy of the Form PTO/SB/08B (considered by the Examiner) did not accompany the Office Action. Applicants request that a copy of the Form PTO/SB/08B be initialed by the examiner and returned to Applicants with the next Office Action.

35 USC 102(b) - US Patent No. 5,079,600 (hereafter "Schnur '600")

Claims 12, 13, 15, 18, 19, and 21 are rejected as anticipated by Schnur '600. Schnur '600 discloses a self-assembling film that is used as a catalytic precursor for an electroless plating bath (see abstract). "For a prior art reference to anticipate in terms of 35 U.S.C. §102, every element of the claimed invention must be identically shown in a single reference." *In re Bond*, 15 USPQ2d 1566, 1567 (Fed. Cir. 1990). Here, Schnur '600 fails to teach or suggest a "diffusion barrier", and therefore fails to anticipate the claims.

The Examiner acknowledges this deficiency, but states that "[i]t is seen to be inherent that the 'thin film' is a diffusion barrier, because it is the same thin film as

disclosed and claimed by Applicant, and because the 'metal' is on the 'thin film' and is not shown in Schnur to diffuse through it, thereby meeting Applicant's definition of 'diffusion barrier'".

This allegation of inherency is insufficient to establish that Schnur '600 anticipates claims 12, 13, 15, 18, 19, and 21. "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'". *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). There is no basis for assuming that a "diffusion barrier" is inherent in Schnur '600. Schnur '600 teaches a self-assembling film as a catalytic precursor for electroless plating (abstract). Schnur '600 fails to mention that his self-assembled film can function as a "diffusion barrier" and further fails to provide any testing that shows that his self-assembling film can prevent diffusion between, for example, silicon and copper. There is nothing in Schnur '600 that suggests that the described catalytic precursor would *necessarily* be a diffusion barrier. Accordingly, there is no basis for assuming that Schnur '600 teaches a "diffusion barrier" and the anticipation rejection is improper for this reason alone.

The deposition of copper, as described in Schnur '600, does not cause diffusion. As is known, even vapor deposited copper on silicon oxide does not diffuse into silicon oxide. High temperatures and/or electrical fields cause the diffusion such as those that were used in the examples in the present application to demonstrate diffusion barrier effectiveness. Without the barrier, copper would have diffused through the oxide under the copper.

In addition, Applicants submit new claims 24-27 which recite the test that was performed by Applicants to demonstrate the “diffusion barrier” properties of embodiments of the invention (i.e., the device is “capable of being biased at about 2 MV/cm at about 200 °C for about 30 minutes without diffusion of metal from the metal layer into the substrate”). This feature is clearly not “inherent” in Schnur ‘600 and there is no motivation in the prior art to modify Schnur ‘600’s embodiment to arrive at the invention defined by independent claim 24. Accordingly, claims 24-27 are clearly patentable over Schnur ‘600.

35 USC 102(b) - U.S. Patent No. 5,389,496 (hereafter “Calvert ‘496”)

Claims 12, 13, 15, 17, 18, 19, 21, and 23 are rejected as anticipated by Calvert ‘496. This rejection is traversed.

Although the Office Action characterizes Calvert ‘496 as teaching a “diffusion barrier”, the words “diffusion barrier” are not present anywhere in Calvert ‘496. Because a diffusion barrier is not mentioned in Calvert ‘496, Applicants presume that the Examiner is relying on an unsupported theory of inherency as was done in the anticipation rejection based on Schnur ‘600. Like Schnur ‘600, Calvert ‘496 discusses a metallization catalyst for electroless metallization and does not teach or suggest a “diffusion barrier”. One cannot presume that the catalyst in Calvert ‘496 would *necessarily* be or function as a “diffusion barrier”. Accordingly, there is no basis for assuming that Calvert ‘496 teaches (or suggests) a “diffusion barrier” and the anticipation rejection is improper.

In addition, for the reasons provided above, new claims 24-27 are clearly not “inherent” in view of Calvert ‘496 so these claims should be patentable over the same.

CONCLUSION

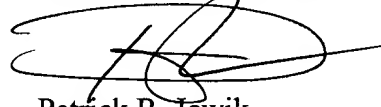
The issuance of a formal Notice of Allowance at an early date is respectfully requested.

G. Ramanath et al.  
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PATENT

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'PJ', enclosed within a large, loopy oval shape.

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